ROYAL STATISTICAL SOCIETY
5 - JUN. 99

BOROUGH OF PRESTON.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

TO THE

URBAN AND PORT SANITARY AUTHORITIES,

FOR THE

Year ending December 31st, 1898.

H. O. PILKINGTON,
Medical Officer of Health,
Medical Officer to the Port Sanitary Authority.

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Report of the Medical Officer of Health.

TO THE CHAIRMAN AND MEMBERS OF THE URBAN AND PORT SANITARY COMMITTEES.

Gentlemen,

In presenting this Annual Report for the year 1898 I have pleasure in recording a lower death rate than has been observed during any preceding year.

This reduction in the amount of mortality was common to the whole kingdom, and amongst the large towns the mean death rate was considerably below the average.

Whilst the causes which have led to this improvement will later on be dealt with in their proper places, and in detailed form, it will here be sufficient to say that it was in the months of Spring and early Summer that the least amount of sickness was prevalent, and that as a consequence the lowest rates of mortality were recorded.

During this period very little infectious disease was observable, while Infantile Diarrhœa did not make its appearance until the advent of the dry hot weather at the beginning of August. For the month ending July 19th the recorded death rate for the Borough was as low as 11·39 per thousand, while in the single week ending July 2nd it did not exceed 8·93 per thousand, absolutely the lowest rate for any week on record.

Again I am able to report an entire absence of Small Pox, although during the early part of the year the disease was present in London, while—a matter of greater importance—occasional cases from time to time cropped up in some of the more neighbouring towns. On this account a vigilant watch was kept upon the Common Lodging Houses, the keepers of which assisted in a fairly satisfactory manner by giving immediate information of all cases of sickness—no matter of what nature—occurring amongst the occupants.

But while the comparative freedom from Small Pox throughout the kingdom during the past year is a matter for congratulation, it must not be forgotten that under the present

Regulations the number of children unprotected by Vaccination—and therefore susceptible to the disease—is year by year increasing. Cases of Small Pox are constantly being introduced into our Sea Port towns, and though time after time the match may be extinguished before much mischief has been done, there will, with a gradually increasing amount of inflammable material, eventually arise a conflagration, which will tax to the utmost the resources of whatever Sanitary Authority may be so affected to restrain and to overcome.

The deaths registered as due to Typhoid Fever numbered 42, and were consequently somewhat in excess of those attributed to the same cause during the past few years. The mortality rate from this disease amounted to 0·37 per thousand, a rate which among the other large towns was equalled in Salford, and somewhat exceeded in Norwich, Sheffield, and Sunderland. The increase in the number of deaths from this cause was due rather to there having been a greater number of cases of sickness than to the disease having been of a more severe form,—since the percentage of deaths to the reported cases was only 18·02, a rate of fatality by no means above the average, and one which has not seldom been exceeded in previous years. It was during the first and the last quarters of the year that the greatest mortality from Typhoid Fever was recorded, and though the deaths were very generally distributed over all parts of the town, St. Peter's Ward showed the greatest proportion of fatal cases.

In dealing with the notified cases of Typhoid Fever advantage was taken of the accommodation provided in the Harris Wards, and in several instances, either at the request of the patient's friends, or of the Medical attendant, or where the safety of the Public Health required it, the removal of the patient to this Institution was effected.

In former Reports the frequent sequence of Typhoid Fever to an epidemic of summer Diarrhœa has been referred to, and the conclusions then arrived at were fully borne out by the events of the past year. Although in the great majority of cases the disease was confined to a single member of any given household, there were instances in which two or more of the same family were affected, and even where infection was spread to an adjoining house, especially in cases where the ashpit was a common one. This was no doubt the result of a want of care in dealing with the discharges from the patient—the vehicle by which infection in such cases is almost universally spread—and with a view to prevent this, I propose in the future to provide pails in which such excreta may be received, to be afterwards properly and safely dealt with.

The mortality from Scarlet Fever—like that of the previous three years—was very low, only 4 deaths resulting from this cause, and of these, one at least was that of a nonresident in the town. But although the death-rate from this cause was so slight, cases of illness, imported from neighbouring towns and districts, cropped up at various times throughout the year, and it was only by the exercise of strict precautions that a more general outbreak was prevented. This is one of the diseases which in most large towns runs its course in regular cycles, the danger of an outbreak being of course increased in proportion to the length of time which has elapsed since the last epidemic, and the consequent increase in the amount of material—i.e. the number of children—liable to infection.

From Measles only a single death was recorded, and this at the commencement of the year; evidently the last spark from the fire which had burned so freely and so fatally during the previous year of 1897, when the deaths of no less than 282 children were attributed to this cause alone.

From Whooping Cough the sickness and mortality were alike of an average character, the majority of the deaths—48 in number—being recorded during the latter half of the year, while St. Peter's and Park Wards together furnished more than three-fourths of the total mortality.

Although the deaths from Diphtheria did not exceed 8, they were exactly double the number for the previous year, and represented nearly one half of the reported cases of sickness. Compared with London, the majority of the large towns and cities, and very many of the smaller towns and rural districts, Preston has always had a low death rate, and therefore a small amount of sickness, from this infectious and fatal disease. Of the 8 recorded deaths, 3 were registered in St. Peter's, 3 in Park, and 1 in St. John's Ward, the remaining one having occurred at the Harris Wards, to which Institution the patient had been removed from Park Ward. At no time was there anything approaching a Diphtheritic outbreak, such cases as did occur being of a sporadic character, while in the majority of cases no definite cause of infection could be ascertained.

The six diseases, which have now been dealt with, represent, with the addition of Diarrhœa, the so called Zymotic Diseases; and for present purposes I have thought it better to deal with Diarrhœa by itself, and as a distinct and separate disease.

Comparing our position, as regards these six Infectious diseases, with that of the other large towns, it will be found that we stand among the very lowest as to the mortality from Small Pox, Measles, Scarlet Fever, and Diphtheria. The death rate from Typhoid and the allied forms of "Fever" is above the average, but is exceeded in Norwich, Sheffield, and Sunderland, while in this respect Salford stands upon the same level as ourselves. But in several of the smaller Towns—those classified by the Registrar General as the 67 other large Towns—our death rate from "Fever" is considerably exceeded.

The 48 deaths registered from Whooping Cough give a Mortality rate equal to 0·52 per thousand, and this again is above the average rate for the large Towns, but is exceeded in Liverpool, Salford, Gateshead and Newcastle.

But it is by the mortality from Diarrhœa—by the deaths of infants during the Summer months—that our general Zymotic death rate is so largely increased. Year by year the same thing has always occurred, although there may be some variation as to the time when the epidemic occurs, the period during which it continues, and the consequent amount of mortality which may result.

During the past year of 1898, the onset of the disease was somewhat delayed, owing to the cool weather which marked the early part of Summer. The end of July and beginning of August saw, however, a change in this respect, a great and oppressive heat succeeding to the cool, wet weather which had hitherto prevailed, and during which not only the Zymotic, but also the general death rate, had been unusually low.

In the week ending August 13th, the Diarrhœa deaths rose to 24, more or less steadily increasing until the climax was reached in the week ending September 3rd, when no less than 40 deaths were attributed to this cause alone. After this date there was a gradual reduction, although as late as the second week in October the Diarrhœal mortality was still heavy.

Altogether Diarrhœa accounted for 279 deaths, of which something like 240 occurred in the six weeks from the middle of August to the end of September. As regards age, 240 were infants under the age of twelve months, 25 were children between the ages of 1 and 5 years, while only 13 were persons of adult age, or over the middle period of life.

As usual it was amongst the offspring of the operative classes that the greatest mortality prevailed, and therefore St. Peter's, Park, and Fishwick Wards all contributed more than their fair proportion to this heavy item in the lists of mortality.

The various causes which either separately, or—as more frequently occurs—acting in combination, each year produce this grievous loss of Infantile life have been too frequently stated, and too thoroughly discussed, to require more than passing reference. The localities in which the Infantile deaths from Diarrhœa were recorded are again set forth in one of the plans appended to this Report, and it is again satisfactory to find that the deaths from this cause have been reduced in those districts in which Sanitary improvements have of late years been carried out.

The connection of the disease with an organism given off at a certain degree of temperature from the polluted soil of a badly paved back yard, points to the importance of having such yards covered with flags, concrete, or some similar impermeable substance, which will at once prevent either the soakage of liquid filth into the subsoil, or the subsequent formation and escape of disease bearing germs into the stagnant air at the back of the dwelling. Once mixed with the atmosphere these germs are readily drawn into the houses, there to settle upon the milk and other articles of food, which too often are left exposed to these, and other contaminations. That milk is the main vehicle by which these microbes are conveyed into the system is shown by the immense proportion of infants who suffer and die from Diarrhœa, as compared with older children and adults.

The employment of so many mothers in the mills necessarily deprives a great number of the children of the operative classes of the nourishment most natural and most suitable for them in the early stage of their existence, but many lives would annually be saved if greater care were spent upon the storage and preparation of the milk, which in the absence of the mothers, must needs form the main part of these infants' support. It should be kept in a cool place, protected from dust and foul smells, should be boiled before use, and if administered in a bottle, the latter should be kept scrupulously pure, and should be without the indiarubber tubing, which always forms a lurking place for sour curd and Diarrhœa producing germs.

The importance of fresh air, personal cleanliness, and suitable and properly prepared food, is shown by the comparative immunity from Diarrhœa amongst the children of the better classes, even at those times of the year when the epidemic is causing such havoc amongst the families of those who are either not equally able, or willing, to attend to the welldoing of their offspring.

The connection of the Diarrhœal mortality with the earth temperature, at adepth of 4 feet, is shown, much more graphically than by any written description, in the Chart which I have as usual appended, and from this may be seen the rapid rise in the number of deaths following upon the registration by the earth thermometer of 56 degrees.

The death rate from Diarrhœa amounted to 2·05 per thousand ; Manchester, with a rate of 2·15 being the only one amongst the large towns which showed a greater amount of mortality from this cause, although in several of the smaller towns this rate was considerably exceeded, notably in Coventry where the rate amounted to 3·04 per thousand.

I have already shown the position which Preston holds as regards the mortality from Infectious disease, but if Diarrhœa be included amongst the Zymotic diseases the great fatality from this cause must needs alter for the worse our relative position with the other large towns.

From the combined Zymotics, those with which I have now already dealt, the mortality rate amounted to 3·06 per thousand, a rate which was exceeded in 11 of the principal towns and cities, and in about 7 of those of smaller population and less importance.

From Croup were registered the deaths of 10 children, a number considerably lower than the average of past years. Possibly the increase in the deaths from Diphtheria, and the reduction in those from Croup, should be read together, since in some cases the diseases are so closely allied as to render the question of exact registration a difficult one.

The next disease on the list of mortality—Consumption—may be taken as meaning Pulmonary Phthisis, or Tubercular disease of the Lungs. The theory which now appears to be generally accepted is that this disease is caused, and caused only, by the reception into the body, and subsequent multiplication, of the Tubercle Bacillus, which in its turn must have been given off by some man, or other animal, already suffering from the disease.

The subject is one which of late has occupied the attention not only of the Medical Profession, of Scientists and Sanitarians, but also of the general public, and it is one which has been freely discussed in the daily press. Those who uphold the Bacillus theory naturally contend that the disease is an infectious one, since it can only be produced from infected material, to the exclusion of heredity and all other causes ; and further claim that as such it should be treated like the other infectious diseases. Some even go so far as to ask that it may be included in the Schedule of diseases concerning which compulsory notification is required. Beyond mentioning the matter, it is of course out of place in a Report like the present to further discuss the subject, but I would at least express a decided opinion that the disease differs so much from the Infectious Fevers in its origin, course, and duration, as to prevent any comparison, and certainly to preclude all idea of compulsory notification. And if even the hitherto generally accepted belief in the hereditary transmission of the disease be wrong, if even it can be proved, that it is not the disease itself, but only the predisposition to it, which is handed down from generation to generation in the tainted blood of a tuberculous family, the result after all is pretty much the same, since there is reason to believe that the germs are harmless unless they enter a constitution prepared by hereditary tendency for their reception, or one otherwise weakened, as by disease, privation, or excess. Whatever may be the actual cause of the disease, there can be no doubt that whatever tends to improve the general health of an individual renders him less liable to contract or develope the disease, while on the other hand an insanitary condition of person or surroundings favours the growth of the germs, if already present, or opens out a field upon which they may take root and grow.

Since it is in the dried sputum (expectoration, matter coughed up) from a tuberculous patient that the dangerous germs of the disease are contained, it is essential that this should be as far as possible rendered harmless, and as quickly as possible destroyed. Cleanliness alone demands that such expectoration should be received into a proper cup or other receptacle ; and in order to destroy the active power of the germs, the vessel should contain a little water mixed with some disinfectant, and should also be frequently cleansed with boiling water. In place of handkerchiefs, the patient should use pieces of rag which can be at once destroyed by burning. With ordinary precautions there need be little fear from associating with those afflicted with Consumption, but in former Reports I have pointed out the undoubted danger which may result from sleeping in a close ill-ventilated bedroom, with a phthisical patient, when the already impure atmosphere is allowed to become fouled with the particles of dried sputum to which I have referred as the chief source of infection. Another means by which Tubercle may be set up is the use of meat or milk from an animal affected with the disease, but this is of much less importance, especially if the bacilli be thoroughly cooked before running the gauntlet of digestion.

The deaths attributed to Consumption number 128,—being at the rate of 1·10 per 1000—of which a very large proportion as usual were registered between the ages of 15 and 45 years. The number is that from the same cause in the preceding year, and shows a considerable improvement over the average mortality for the past six or ten years. Improvements in the habits of the people, in the drainage and ventilation of the houses in which they live, and in the Factories and Workshops in which they are employed, all tend to improve the general health, and to lower the mortality from this cause.

Bronchitis, Inflammation of the Lungs, and Chest Affections partaking of the character of one or both of these diseases, accounted for 360 deaths, of which a great part occurred during the cold weather at the commencement and close of the year. These inflammatory diseases of the Lungs and air passages accounted for a lower rate of mortality than was the case for a considerable number of years, the diminution being due to the comparatively small number of deaths from these causes recorded amongst infants and elderly people during the early part of the year.

The deaths of Infants and young children from Premature Birth, Convulsions, wasting diseases, and other affections peculiar to the early period of life, as usual formed a large proportion of the total mortality ; indeed these deaths—514 in number—accounted for something over one fourth of the total number of deaths at all ages and from all causes.

Although the actual number of these deaths under the age of twelve months was lower than that of any previous year for a considerable period, they formed a larger percentage of the total mortality, owing to the reduction in the number of deaths accounted for by other causes.

This Infantile Mortality, measured against the Births, stands in the proportion of 221 per 1000; in other words, out of every thousand children born, 221 failed to complete the first year of their lives, many of them succumbing within a few days, or even hours, of their birth. In this respect Preston again occupies the worst position amongst the other large towns, the average infantile mortality for which amounted to 178 per 1000; Blackburn, Gateshead, and Salford being the three which came the nearest to us in this respect. In London the proportion was 167 per 1000, but in some few of the smaller towns the figure recorded was even higher than that of Preston. The subject is too important, too serious in its consequences, to be allowed to pass without comment, and yet, since the same causes are at work which year by year produce the same deplorable results, it becomes a difficult matter to avoid what may seem unnecessary repetition. Whatever tends to improve the sanitary condition of the town helps to reduce the chances of death amongst infants, as amongst those of older growth, and this is set forth, and will be referred to later on. But so much might be done by the people themselves, so many lives might be saved by greater care on the part of those in whose custody the welfare of these infantile lives is placed. Leaving out the great number of infants, which either from premature birth, or other causes, are deficient in vitality from their first entrance into the world, and which pass out of it, it may be, in a few hours, there is displayed in the case of many others an apathy and want of care which militate against their chances of existence.

There is too much of the fatalistic idea that certain ailments are inseparable from infantile life, and too much reliance is placed upon the consolation of thinking that a child, dying young, is better off than living to face, and battle with, the world. Because however undoubtedly true this may be, it still in no way lessens the responsibility of those by whom the child has been begotten and brought into existence. I do not say it is from any want of affection, but rather from a want of realising how by a little attention to what may seem trifling matters, so many ailments might be avoided, so many deaths might be prevented.

Many of the same causes which bring about Infantile Diarrhœa, and which tend to render it so fatal, are at work in producing the varied diseases which are grouped together under this heading of Infantile Mortality.

One cause—Artificial Feeding—with its dangers of unsuitable food, and want of cleanliness in its preparation, is mainly due to the employment of so many mothers in the cotton industry—the staple trade of the town.

This is shown by the comparative freedom from Diarrhœa amongst the infants of the Irish population, the great proportion of which are fed from the breast, a fact especially noticeable in Liverpool, and one recently commented upon by the Medical Officer of Health for that city. In previous years I have shown that the same thing prevails—although perhaps to a less extent—in Preston, and this in spite of the adverse social conditions under which in most large towns the greater part of the Irish race are living.

St. Peter's, Park, and Fishwick are the Wards in which, in proportion to the population, the greatest Infantile Mortality was recorded, but these also are the districts in which was registered the heaviest Birth-rate.

Natural decay and diseases affecting the other extreme of life, classified as Old Age, occasioned 61 deaths, of which 4 were those of persons who had exceeded the age of 90 years.

Although the number of deaths from Suicide, Accident, &c., grouped together as due to Violence, can hardly be so much affected by social or climatic conditions as are the majority of diseases, there is still a diminution in this respect, 49 deaths having been recorded as against an average of 55 during each of the preceding six years.

The remaining deaths—603 in number—are due to causes other than those already described, and one classified in the mortality sheets as Other Diseases. They include organic diseases of various kinds, and chiefly occur during the later middle and waning periods of life. They have no special interest since they are not especially prevalent in any given locality, and are not connected with any particular kind of trade or employment.

Their addition to the other causes of mortality makes up a total of 2107 deaths registered during the year, and these represent a rate of 18·10 to each thousand of a population, which is estimated by the Registrar-General at 116,356 persons.

Distributing the deaths amongst the various Wards, it will be seen that Park Ward shows the heaviest rate—20·10 per thousand, while as usual Christ Church occupies the best place with a rate not exceeding 13·96 per thousand. Fishwick Ward and St. John's are nearly equal with respective rates of 18·44 and 18·12, St. Peter's following with 16·39, while Maudland shows a rate—14·58, but little in excess of that of Christ Church.

The number of Births recorded was 3559, or at the rate of 30·58 to each thousand persons.

For some time past the Birth rate has been declining, a condition which has been almost universally prevalent throughout the kingdom. In London, although the rate of marriage was higher than during any of the past twenty years, the Birth rate was absolutely the lowest upon record, not exceeding 29·5 per thousand. The average rate for the large towns was 30·3 per thousand, the actual highest rates being recorded in Wolverhampton, Birmingham, Salford, Liverpool, Sunderland, and Gateshead. This steady and continued diminution in the Birth rate of England is a serious matter, and one which cannot be readily explained.

The natural increase for the year—the excess of Births over Deaths—is represented by 1452 lives, almost the highest number on record, a fact due to the decrease in the mortality exceeding that in the number of Births.

Although, as I have shown, the actual number of deaths occurring in the Borough was 2,107, and the annual rate 18·10 per thousand, the figures compiled by the Registrar-General, as shown in Table 9, give a death rate of 19·3, the increase being due to the addition of 138 deaths, those occurring in the Workhouse—situated outside the Borough—amongst persons who were formerly residents in the town. Further particulars as to these deaths—the causes and ages from, and at, which they took place—are as usual set forth in Table No.14.

In connection with the mortality there is one point to which reference should be made, and that is the number of uncertified deaths. These deaths—66 in number—are those in which no Medical certificate has been given, and concerning which no Inquest has been held. They form nearly 3 per cent. of the total deaths, a figure which is only exceeded amongst the other large towns in Liverpool and Blackburn. Amongst several of the towns of smaller population and less commercial importance even this high percentage is considerably exceeded, notably in Dudley—4·7, St. Helen's—5·2, Barrow-in-Furness—5·2, Dover—5·7, and Warrington—6·4. Although—so far as Preston is concerned—the cause of many of these deaths is evident, and beyond suspicion, there is still a considerable proportion, chiefly sudden deaths amongst very young children, in which such a mode of registration is eminently unsatisfactory.

I have long contended that there should be a Medical adviser to each Coroner, whose duty it would be to make an inquiry into the circumstances attendant upon such deaths, and then decide whether or not an Inquest was necessary. Although in many instances the expense and delay of this latter procedure would be avoided, still the fact that an inquiry—however informal—was held, would have a salutary effect, and would certainly have a deterrent effect upon carelessness which in many cases is but little less than criminal.

High as the percentage of these uncertified deaths may seem, it is nevertheless below that of the previous year, when it amounted to 3·2 of the total registered mortality. Further information as to the causes of the various deaths, and as to the ages at, and localities in, which they occurred will be found in the appended Tables. Two causes, which are included amongst the notifiable diseases, and of an infectious character, are worthy of reference, viz.: Puerperal Fever and Erysipelas. From the first-named 6 deaths occurred out of 11 cases reported by Medical certificate. This is a large proportion but not higher than that usually met with, since the disease is essentially a dangerous one. It is satisfactory to know that, as a result of the precautionary measures adopted, in no instance was there any spread of infection.

Erysipelas occasioned only 3 deaths, although the reported cases of sickness amounted to 51, many of them being of a trivial nature, and hardly such as were contemplated when this disease was included in the schedule of notifiable diseases.

Still the disease is an infectious one, and since in some cases it may be due to insanitary conditions about the house, it is well that in each case an examination of the premises should be made. On the other hand it is advisable that Medical men should exercise discretion, and not report trivial cases, as where a slight Erysipelatous attack has followed upon an injury, or some previously existing disease.

A general summary of the sanitary work done during the twelve months, is given as usual in Table No. 11. The work of collecting the ashpails, and removing their contents to the Public Destructors, is one, which, in consequence of the continued substitution of water closets for privies, is each year increasing.

The great merit of the ashpail system consists in the frequent removal of household refuse from the neighbourhood of the dwelling, and its success therefore depends upon the careful and thorough manner in which this is done. Although frequent emptying of these pails implies expense to the Corporation, the improvement in the sanitation of the town justifies the outlay. But the householder, on whose behalf the work is done, should recognise the advantage of no longer having large accumulations of offensive and decaying matters in the vicinity of his dwelling, and should do what he can to assist the efforts of the Sanitary Authority. With a little management much of the animal and vegetable refuse of a house can each day be destroyed upon the kitchen fire, and the pails would then become, as intended, receptacles for dry ashes only, and would not be rapidly filled to overflowing with matters which even in a few days may readily become offensive, and even dangerous.

At the same time the yard and lobby of the house should not be used for the storage of miscellaneous and useless lumber, which not only serves to collect germs of dirt and disease, but frequently in itself becomes a nuisauce to the senses of sight and smell. With a watercloset and ashpail, there is no excuse for the retention of offensive matters about a household.

The work of substituting a watercloset, with such dry ashpail, in place of the evil smelling and dangerous privy-midden, has made good progress during the year, notices having been served for 397 such conversions.

Since by arrangement with the Trades Unions, the Corporation no longer itself undertakes this work, a greatly increased amount of labour is thrown upon the Sanitary Department, since thorough and carefully prepared specifications have to be drawn up by the Inspectors for the guidance of the tradesmen who may tender for and undertake the necessary work.

In previous years I have referred to the improvement in health of the inhabitants of those districts in which alterations of this kind have been effected, more especially where, in the course of time, a large area, covered with houses of similar construction, could thus be dealt with. In No. 1 District the houses forming the parallel rows of streets to the north side of Ribbleton Lane, extending from St. Mary's Street to St. Luke's Church, have now been dealt with in this manner, with a marked diminution, amongst other good results, in the death rate from Infantile Diarrhœa. In No. 2 District, consisting of Park Ward, 132 such conversions have been effected, and though the blocks of property have been more scattered, they have in every instance been such as called for sanitary attention. In this District 28 houses, forming part of Singleton Row, have also been closed as unfit for human habitation. In Nos. 3 and 4 Districts, the conversions from the old privy to the water carriage system, number respectively 74 and 107, the necessity for alteration being equally imperative, and the resulting improvement equally apparent. In the last named District, consisting of Christ Church and Maudland Wards, and therefore comprising much of the better class property in the town, a thorough examination has been made of many residences, either at the request of the owner or of an ingoing tenant. Defects of various kinds, some of which had already occasioned nuisances, while others, though unsuspected, were still equally dangerous, were in this manner brought to light and remedied. In various parts of the town, the drains of 77 houses were opened up, and subjected to a thorough test, either on account of some complaint, or in the course of enquiry into the cause of sickness which had occurred upon the premises.

The Common Lodging Houses have received constant and regular attention, not only to insure their being kept in as cleanly and wholesome a condition as the structural arrangements—in many cases not of the most satisfactory kind—would permit, but also to guard against the importation of any form of infectious disease.

One House has been closed, whilst advantage has been taken of any change in the management or ownership of others to get such improvements effected as could reasonably be enforced. Large establishments—like the Arkwright Arms—where the fittings are adapted to the purpose they are intended to serve, and where salutary regulations as regards cleanliness and order are strictly enforced, are infinitely superior to the smaller establishments, many of which would not be registered were it not for the increased facilities which are thus obtained for inspection and control. The House in question continues to do good work by affording a cheap and comfortable home to unmarried labourers, &c., whilst to the philanthropy of the proprietor, the town is indebted for the demolition of St. John's Market and the conversion of the site into an open area.

The Canal Boats, of which 34 now stand upon the Register, have been inspected when opportunity has been afforded by their visits to the town, and the usual Report dealing with their condition has already been forwarded to the Local Government Board. Apart from the extremely limited accommodation there is little complaint to be found with the condition of the Boats, their occupants, like the migratory population who inhabit the Vans and Tents, which at various times are pitched upon the outskirts of the town, appearing to take a pride in the scrupulous cleanliness of the interior of their dwellings. Amongst both classes but little sickness has been observable, and it would seem as if the outdoor life, and free exposure to the fresh air, fully compensated for the cramped accommodation of their living and sleeping rooms.

As regards the Slaughter Houses, I hoped at the present date to have been able to report that the great majority had been permanently closed and done away with. Of the 33 which it was decided might be retained, conditionally upon their complying with certain requirements, 26, situated in 19 different localities, have now been altered and improved in accordance with the specified conditions.

As there was some little doubt whether the accommodation afforded by these Private Slaughter Houses, in conjunction with the Public Abattoir at the Cattle Market, would conveniently suffice for the requirements of the whole town, it was decided, by a resolution of the Council in March of this year, to double the size of the present Public Abattoir and so in effect to carry out the Scheme as originally proposed. When this is completed—and it is to be hoped the work will be carried out with all possible dispatch—there will no longer be any question as to there being abundant provision for the wants of the whole town, and it will only remain to revise the Register, and close all those Private Slaughter Houses which have already been practically condemned.

I need not again refer to the advantages which must follow from this course of procedure, both as regards the possibility of a thorough inspection of meat, and the abolition of a number of undoubted nuisances; since these have frequently been dealt with in former

Reports, and are now generally admitted even by those who in the first instance were opposed to the scheme of a Public Abattoir.

Year by year the importance of having a pure food supply is becoming more recognised, and more insisted upon ; and at all Sanitary Congresses, and amongst those who are best qualified to speak upon the matter, there is a general and unqualified consensus of opinion in favour of the Public Abattoir as opposed to the Private Slaughter House.

The meat condemned and destroyed amounted to 70,769 lbs. and since the whole of this large amount was voluntarily submitted to inspection, and, when condemned, at once given up for destruction, no offence was committed, and there was therefore no necessity for legal proceedings.

The Fish destroyed in the same manner amounted to 36,504 lbs. the greatest part having been taken in the Wholesale Market, but in every instance with the consent, if not at the request, of the dealer to whom it had been consigned.

The Dairies and Cowsheds situated within the limits of the town have been regularly and carefully inspected. Many of these have been established for years, and while I quite appreciate the difficulty of dealing with an industry of long standing, and one which undoubtedly supplies a want amongst the poorer classes of the community, it cannot be denied that many of them fall short of the sanitary requirements of the present day. The question of a pure milk supply is one of the questions of the hour, and while I am quite satisfied that in too many cases the milk degenerates after passing into the possession of the consumer, there is reason to believe that in many Town Dairies, and also in many Country ones, there is a want of care in dealing with an article so easy of contamination, and so liable to infection.

Whatever may be the immediate result of the Tuberculosis inquiry, it is to be hoped that it will ensure to the public a purer supply of this the most essential article of human food.

As will be seen from Table No. 6, samples of various articles of Food and Drugs to the number of 114 were purchased at various shops, &c., and submitted to analytical examination. A great proportion of these were Milk, and though in a few instances it was not found to be of the best quality, there was no case in which there was evidence of serious adulteration. So far this is satisfactory, but a chemical examination such as this deals only with the question of adulteration, and in no way invalidates what I have said as to the possibility of the milk becoming the receptacle and vehicle of dangerous germs.

As regards the other articles examined, these were, with few exceptions, found to be genuine and of good quality. In only one instance was it thought necessary to take stronger measures than a cautionary letter from the Town Clerk, and in this particular case—where a sample of Butter was found largely adulterated with foreign fats—a summons at the Police Court resulted in a conviction, followed by a fine of ten shillings and costs.

In only 2 other instances was it necessary to have recourse to legal proceedings, both being for the purpose of suppressing an effluvium nuisance from a manure manufactory situated at the Eastern side of the town, and concerning which proceedings resulting in conviction, had on several previous occasions been taken. The proceedings, now referred to, followed each other after a very short interval, and fines of £5 and £10 respectively were imposed. More permanent benefit has however followed, since the place has since been closed; it having been conclusively proved that a business like that in question could not be carried on in such a building, and with such unsuitable appliances, without the constant production of a nuisance detrimental to the health of those living in the neighbourhood.

A considerable number of notices to Sewer, Level, and Pave were served with reference to the Streets and Back Streets on the Frenchwood Estate, in the neighbourhood of Stephen's Road, and in Plungington Road North. Although work of this kind is not initiated by the Sanitary Committee, the making out and subsequent service of the notices forms no inconsiderable part of the Sanitary Inspectors' duties. Although more properly belonging to the Borough Surveyor's department, the result of such work is undoubtedly to improve, not only the appearance, but also the sanitary condition of the localities so dealt with, and on this account I have not opposed the increased work thrown on the Sanitary Staff. Because where streets, and more especially back streets, are allowed to remain for a considerable time unpaved, they become mere places of deposit for all kinds of objectionable refuse. The very fact that some good result can be seen for the trouble of cleaning the space at the front and back of a house, leads to its being more frequently done, and this again induces other habits of thrift and cleanliness. It is on this account that I so strongly advocate the flagging or concreting of all back yards, as opposed to the too frequent system of imperfect pavement, and I am satisfied that the owners of cottage property would soon be repaid the first expense, not only by a reduction in their bills for constant repairs, but also by a general improvement in the habits of their tenants. Even where there may be a desire to keep it clean, a pebble paved yard is so unsatisfactory that it soon leads to habits of carelessness, with the result that the ground between and beneath the stones soon becomes impregnated to a depth of some inches with the most offensive and dangerous matters.

As a consequence there is always in the immediate neighbourhood of such a house a lurking enemy, which only requires the warmth of a summer's sun to rouse it from latent into active life, and so to cause disease, followed but too frequently by death.

The number of houses fumigated was 342, somewhat in excess of the number of those in which cases of notifiable infectious disease were reported; the excess being made up either by houses in which this course of procedure was adopted from motives of cleanliness, or else by those in which deaths from Pulmonary Consumption had taken place. As regards this latter class of cases, disinfection will be carried out upon application from the tenants or owner, or—which is the more satisfactory course—upon a certificate from the medical attendant that such a precaution is necessary or even advisable.

Throughout the year large quantities of disinfectants—both liquid and powder—were gratuitously supplied, not only for use in cases of infection, but also for general household purposes. Lime ready prepared for whitewashing purposes was also freely distributed, more especially during the months of spring and summer.

As regards all these substances, there is reason to believe that in some cases unfair advantage is taken of this gratuitous distribution, and though it is unwise policy to unduly check the use of these disinfectants, it should be understood that they are not intended for wholesale use in workshops and manufactories, and that such as can afford to do so, should obtain their own supplies.

The meteorological conditions of a year exert a decided influence over the incidence of disease, and so materially affect the amount of mortality. The winter months were marked by a mild temperature, while no great heat was experienced until the summer was well advanced; and these conditions, certainly the most favourable for this locality, no doubt played an important part in bringing about the low death rate of 1898.

Rain fell upon 122 days, the total amount registered being 29·01 inches, an amount below the average of former years.

H. O. PILKINGTON,

MEDICAL OFFICER OF HEALTH.

May 12th, 1899.

PORT SANITARY.

Although during the past year an increased number of vessels came within the limits of this Port, there is nothing much to which reference need be made, the usual statement of work done, and defects remedied, being given in the appended Table No. 12.

Defective conditions were found in 143 instances, some of a trivial, others of a more serious nature, but it is satisfactory to find that in every instance immediate steps were taken to remedy the conditions about which complaint was made. This was the case whether the matter was one to which it was necessary to draw the attention of the owners, or one which, having been caused by some remissness or neglect on the part of the crew, could be remedied by them. Sailors are naturally careless as to their surroundings, and as a consequence conditions—not absolutely dangerous but still insanitary—are allowed to arise and exist until attention is drawn to them by the Inspector, and herein consists the value of regular and careful inspection. This is especially the case as regards the forecastle, and since some hours of each day must needs be spent in this confined space, it is important that it should be kept in as clean and healthy a condition as circumstances will permit. The condition of the water casks and tanks is a very important matter, since the supply must be stored in them for some considerable time, and however pure it may be when first taken on board, it soon deteriorates, and becomes positively injurious, if kept in a foul receptacle or mixed with a decomposing residue.

Although there was occasional sickness amongst the crews of incoming vessels, there was at no time anything of an infectious nature, any doubtful case being kept under observation until recovery. The Hospital, erected for Cholera purposes, has been maintained in an efficient condition, although there is fortunately no prospect of its services being called into requisition. The question as to how the expense attendant upon the treatment of sea-borne Cholera should be defrayed is still engaging the attention of Port Sanitary Authorities and their Officers of Health. Since the protection afforded by the provisions at each Port are for the benefit of the whole country, it seems but fair that the expenses should be generally distributed, and not entirely defrayed by the towns in question.

H. O. PILKINGTON,

Medical Officer of Health.

May 12th, 1899.

TABLE No. 1.

Number and Causes of Deaths at different Ages, for the Year ending December 31st, 1898.

Cause of Death.	Under 1 Year.	1 to 2	2 to 5	5 to 10	10 to 15	15 to 25	25 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100	Total.	Year 1897	Year 1896	Year 1895	Average for 6 years
Small Pox	...	...	...	...	...	...	...	...	...	..	...	..	...	...	...	...	...	·13
Fever	...	...	3	2	5	12	11	8	1	..	..	...	...	42	35	23	22	33·14
Scarlatina, &c.	..	1	1	2	...	...	...	...	...	...	...	...	...	4	5	3	4	8·36
Measles	1	...	...	...	...	...	.	...	...	...	...	...	...	1	282	3	46	89·17
Diarrhœa	241	18	6	1	...	...	...	1	3	7	1	1	...	279	294	135	284	246·33
Whooping Cough	28	16	2	2	...	..	...	...	...	...	...	...	...	48	30	39	46	40·5
Diphtheria	1	2	4	. .	...	...	1	...	...	...	...	...	...	8	4	11	4	7·64
Croup	3	1	4	2	...	...	...	...	...	...	...	...	...	10	16	18	19	13
Consumption	...	2	...	...	2	29	49	27	13	5	1	...	...	128	151	149	162	157·66
Bronchitis	76	26	17	2	...	4	6	11	26	43	26	3	...	240	293	268	289	266·
Inflammation of Lungs	27	15	10	5	1	5	15	13	9	12	7	1	...	120	155	177	168	165·17
Teething, Convulsions Premature Births & Debility	419	46	33	13	3	...	...	...	...	...	...	...	...	514	592	568	631	577·5
Old Age	...	...	...	...	...	..	...	...	...	5	32	20	4	61	104	82	90	80·
Violence, &c.	3	...	5	2	3	6	10	9	3	5	2	1	...	49	59	51	62	55·33
Other Diseases	5	2	7	11	14	38	91	87	120	140	76	12	...	603	667	664	701	668·67
Total	804	129	92	42	28	94	183	156	175	217	145	38	4	2107	2687	2191	2528	2408·60

TABLE No. 2.

Number and Causes of Deaths in each Month of the Year ending December 31st, 1898.

Cause of Death.	January	February	March	April	May	June	July	August	September	October	November	December	Total.
Small Pox	...	...	...	...	...	...	...	...	...	..	...	...	...
Fever	6	2	8	1	...	...	2	1	5	4	8	5	42
Scarlatina	...	2	...	...	...	...	...	1	...	...	...	1	4
Measles	...	1	...	...	...	...	...	...	...	...	...	...	1
Diarrhœa	6	2	3	2	4	4	5	88	133	25	6	1	279
Whooping Cough	...	...	...	2	1	6	2	9	7	4	3	14	48
Diphtheria	2	1	...	1	...	...	...	...	1	1	...	2	8
Croup	...	1	1	2	...	3	...	1	...	...	...	2	10
Consumption	12	13	7	9	12	13	7	7	4	13	16	15	128
Bronchitis	16	20	30	26	14	11	9	12	7	22	39	34	240
Inflammation of Lungs	17	5	15	9	9	11	4	3	8	10	17	12	120
Teething, Convulsions, &c.	38	29	65	30	37	34	29	53	56	43	47	53	514
Old Age	6	5	6	5	2	6	4	5	7	6	5	4	61
Violence, &c.	3	3	2	3	5	9	5	2	6	4	2	5	49
Other Diseases	53	53	69	51	43	61	41	39	45	48	42	58	603
Total	159	137	206	141	127	158	108	221	279	180	185	206	2107

TABLE No. 3.

Number and Causes of Deaths in each Ward for the Year ending December 31st, 1898.

Wards.	Small Pox.	Fever.	Scarlatina, &c.	Measles.	Diarrhœa and Dysentery.	Whooping Cough.	Diphtheria.	Croup.	Consumption.	Bronchitis.	Inflammation of Lungs.	Teething, Convulsions, Premature Births, & Debility	Old Age.	Violence, &c.	Other Diseases.	Total Deaths.	Rate per 1000 per annum.	Total Births.	Rate per 1000 per annum.	Population.
St. Peter's Ward	...	10	1	1	54	20	3	...	23	39	14	96	7	3	91	362	16·39	758	34·32	22081
Park Ward	...	9	...	...	94	19	3	2	32	62	37	141	16	9	143	567	20·10	905	32·08	28203
Fishwick Ward .	...	7	...	...	57	1	...	5	29	58	25	129	14	4	117	446	18·44	805	33·28	24186
St. John's Ward...	...	4	...	...	36	2	1	1	18	31	20	50	7	3	75	248	18·12	395	28·87	13679
Christ Church Wd.	...	3	2	...	16	2	...	...	8	27	10	36	9	8	67	188	13·96	300	22·28	13464
Maudland Ward...	...	5	...	...	22	4	...	1	15	21	7	56	8	3	73	215	14·58	393	26·65	14743
Gaol, Infirmary, &c.	...	4	1	...	..	...	1	1	3	2	7	6	...	19	37	81	...	3	...	...
Total	...	42	4	1	279	48	8	10	128	240	120	514	61	49	603	2107	18·10	3559	30·58	116356

Death Rate per annum per 1,000 of Population for the Year........................18·10

Average Death Rate per annum per 1,000 of Population for the past six years 21·26

Do. Do. for 10 years ....28·13

Death Rate per annum per 1,000 of Population, of Children under one year ... 6·90

Per centage of Deaths under one year to total Deaths for the Year...............38·15

Do. Do. for 10 years .... 35·11

TABLE No. 4.

Number of Deaths in each Ward during each Month of 1898.

WARDS.	January	February	March	April	May	June	July	August	September	October	November	December	Total.
St Peter's Ward	25	22	25	25	26	27	19	34	54	29	34	42	362
Park Ward	32	40	48	37	32	38	30	76	75	53	47	59	567
Fishwick Ward	41	28	44	33	19	34	21	44	67	32	40	43	446
St. John's Ward	21	8	30	19	16	20	10	23	39	25	21	16	248
Christ Church Ward	18	11	21	12	10	12	11	18	16	14	23	22	188
Maudland Ward	14	24	30	10	15	16	13	20	25	17	16	15	215
Gaol, Infirmary, &c.	8	4	8	5	9	11	4	6	3	10	4	9	81
Total	159	137	206	141	127	158	108	221	279	180	185	206	2107

TABLE No. 5.

Per Centage of Deaths from Zymotic Diseases to Sickness reported during the Year ending December 31st, 1898.

Disease.	Number of Cases Reported.	No. of Deaths.	Per Centage.
Small Pox	...	...	...
Typhoid Fever	233	42	18·02
Scarlet Fever	48	4	8·33
Diphtheria	19	8	42·10

TABLE No. 6.

Substances submitted for Analysis during the year 1898.

Nature of Article.	No. of Samples	Result.
New Milk	41	Genuine.
Butter	19	Do.
Olive Oil	3	Do.
Pepper	6	Do.
Ground Ginger	2	Do.
Mustard	4	Do.
Coffee	7	Do.
Arrowroot	1	Do.
Cheese	5	Do.
Lard	3	Do.
Sugar	1	Do.
Tincture of Rhubarb	3	Do.
Whisky	3	Do.
Malt Vinegar	2	Do.
Margarine	1	Without label; Cautioned by Town Clerk.
New Milk	1	2·38 per cent. fat, 8·18 per cent. other solids=10·56 per cent. total solids; Cautioned by Town Clerk.
New Milk	1	3 per cent. fat, 7·9 per cent. other solids=10·9 per cent total solids; Cautioned by Town Clerk.
New Milk	1	2·53 per cent. fat, 8·73 per cent other solids=11·26 per cent. total solids; Cautioned by Town Clerk.
New Milk	1	Very poor milk, and possibly contains a little separated milk and water
Ground Ginger	1	Contains upwards of 10 per cent. of spent ginger; Cautioned by Town Clerk.
Butter	1	68 parts other than butter; Fined 10/- and costs, or seven days.
Butter	1	Is a very suspicious one, and may contain a small quantity of margarine.
Rum	1	28·3 under proof; Cautioned by Town Clerk.
Tincture of Rhubarb	1	60 do. do.
Ice Cream	1	Usual ingredients, swarming with bacteria.
Ice Cream	1	Do. do.
Ice Cream	1	Is genuine, but contains numerous bacteria.
Ice Cream	1	Do. do.
	114	Samples
	2	Private Samples.

TABLE No. 7.

Contagious Diseases (Animals) Act, 1878.

Name of Disease.	Situation of Premises.	Date of Outbreak.	Number of Diseased Animals.	Number of Healthy Animals in contact with Disease.	Slaughtered by Order.	Number of Visits.
Swine Fever	32 Charlotte Street	Feb. 4th, 1898	Four	Three	Three	Six
Swine Fever	Hull's Yard, Sedgwick Street	April, 7th 1898	Sixteen.	Twenty	Twenty	Five
Swine Fever	Pinfold Farm Fishwick	April 7th, 1898	Three	None	None	Three
Swine Fever	Fishwick Lane	May 17th, 1898	Seven	None	None	Five

TABLE No. 8.

Return of Work done by Inspector of Food and Drugs, &c., for year 1898.

Food and Drugs, Samples purchased	114
Cow-sheds and Dairies visited	629
Slaughter-houses Visited	5805
Meat Condemned and Destroyed	70769 lbs.
Fish Do.	36504 „
Fruit Do.	80 „

TABLE No. 9.

Birth Rate, and Analysis of the Zymotic Death Rate in 33 of the largest English Towns for the year ending December 31st, 1898. Compiled from the Registrar-General's Returns.

Name of Town.	Population.	Birth Rate.	Death Rate.	ZYMOTIC DEATH RATE.								Deaths under one year to 1,000 Births.
				Small Pox.	Meas-les.	Scarl't Fever	Diph-theria	Who'ping Cough	Fever	Diarr-hœa.	Total.	
London	4,504,766	29·5	18·6	0·00	0·68	0·13	0·39	0·48	0·13	0·97	2·80	167
West Ham	286,654	30·6	15·4	0·00	0·31	0·08	0·63	0·41	0·25	0·98	2·67	170
Croydon	124,421	25 3	13 8	0 00	0·27	0·07	0·13	0·28	0·08	1·14	1·99	150
Brighton	122,310	24·8	16·9	0·00	0·67	0·06	0·17	0·17	0·14	1·14	2·36	180
Portsmouth	186,618	26·7	16·3	0·00	0·37	0·17	0·29	0.23	0·23	0·86	2·15	155
Plymouth	99,136	29·6	19·5	0·00	0·71	0·04	0·10	0·28	0·06	0·95	2·14	170
Bristol	316,900	28 6	17·2	0·00	0·97	0·04	0·14	0·36	0·08	1·09	2·69	164
Cardiff	177,770	31·1	14·8	0 00	0·28	0·04	0·72	0 24	0 09	0·84	2·23	158
Swansea	102,001	28·9	18·5	0·00	0·86	0·11	1·22	0·39	0·13	0 49	3 21	184
Wolverhampton	88,051	35·7	21·2	0·00	0·21	0·26	0·43	0·10	0·22	1·94	3·19	199
Birmingham......	510,343	34·0	20·0	0·00	0·35	0·09	0·25	0 49	0·22	1·36	2·78	190
Norwich	111,699	29·8	18·9	0·00	0·67	0·20	0·12	0·33	0·40	1·51	3·26	194
Leicester	208,662	29·5	16·9	0·00	1·02	0·21	0·29	0·09	0·14	1·57	3·35	191
Nottingham	236,137	28·8	17·6	0·00	0·44	0·14	0·10	0·24	0·23	1·20	2·37	178
Derby	104,834	27·3	16·8	0·00	0·50	0·19	0·08	0·26	0·26	0·93	2·24	168
Birkenhead	113,189	30·4	17·4	0·00	0·26	0·28	0·43	0·07	0·33	1·13	2·53	184
Liverpool.........	633,645	35·1	23·9	0·00	0·43	0·22	0·23	0·51	0·26	1·54	3·21	184
Bolton	122,495	30·9	19·3	0·00	0·25	0·19	0·06	0·37	0·31	1·74	2·93	167
Manchester	539,079	32·7	21·9	0·00	0·50	0·12	0·09	0·31	0·23	1·84	3·11	197
Salford............	215,702	34 7	22·7	0·00	0·46	0·29	0·15	0·60	0·37	2·15	4.03	213
Oldham	148,288	25·3	17·5	0·00	0·57	0·16	0·06	0·43	0·15	0·76	2·15	174
Burnley	109,546	27·1	16·3	0·00	0·07	0·05	0·27	0·06	0·24	1·33	2·04	196
Blackburn	133,228	27·0	18·4	0·00	0·37	0·12	0·23	0·03	0·24	1·56	2·57	207
Preston	**116,356**	**31·0**	**19·3**	**0·00**	**0·01**	**0·03**	**0·06**	**0·52**	**0·37**	**2·05**	**3·06**	**221**
Huddersfield ...	102,454	22·4	15·9	0 00	0·31	0 09	0·12	0·11	0·10	0·86	1·61	152
Halifax............	96,729	22·9	17·8	0 00	0·72	0·14	0·08	0·36	0·18	0·64	2·14	163
Bradford	233,737	23·9	17·6	0·00	0·44	0·04	0·07	0·29	0·21	1·04	2·11	184
Leeds	416,618	31·2	19·2	0·00	0·46	0·28	0·53	0·38	0·22	1·21	3·11	182
Sheffield	356,478	33·8	20 2	0·00	0·49	0·16	0·26	0·61	0·40	1·89	3·82	194
Hull	229,887	33·4	18·3	0·00	0·40	0·12	0·07	0·29	0·25	1·84	2·98	182
Sunderland	143,849	35·4	22·6	0·01	0·59	0·22	0·06	0·47	0·48	1·86	3·71	201
Gateshead	103,775	35 5	20·6	0·03	0 49	0·18	0·09	0·63	0·17	1·48	3·10	208
Newcastle	223,021	31·6	21·4	0·01	0·56	0·11	0·13	0 62	0·30	1·09	2·85	190

TABLE No. 10.

Meteorological Observations for the Year ending December 31st, 1898.

Month.	Attached Thermometer.	Barometer.	Barometer corrected to 32deg. Fahr.	Hygrometer.		Temperature in Shade.		Earth Thermometer.		Mean Daily Temperature.	Humidity Saturation=100	Temperature of Town's Water.	Rainfall in inches.	Wind velocity in miles.	Number of Deaths from	
				Dry Bulb.	Wet Bulb.	Maxi-mum.	Mini-mum.	One Foot	Four Feet.						Bronchitis.	Diarrhœa.
January	41·60	30 087	30·201	41·57	40·57	49·21	39·71	41·35	46·75	43·38	91	35·6	3·03	2863·4	16	6
February ...	38·74	29·883	29·995	38·53	36·75	46·07	34·85	40·32	46·17	39·79	85	36·3	2·68	3445·4	20	2
March	38·63	29·745	29·867	38·45	37·11	44·54	34·79	38·05	42·85	39 09	86	35·0	0·38	3068·8	30	3
April	47·68	30·054	30·157	48·06	45·82	54·47	45·27	44·89	45·60	49·12	84	40·0	0·87	3117 6	26	2
May	51·70	29·860	29·949	52·17	48·99	58·96	44·03	48·57	48·05	51 73	81	41·0	2·64	3075·2	14	4
June	58·51	29·861	29·922	58.65	54·77	64·03	48·16	53·97	52·51	56·95	77	45·0	2·81	3835·2	11	4
July...........	61·67	30·068	30·121	61·82	56·32	66·07	52·03	57·03	55·85	60·08	69	55 5	0 08	3192·5	9	5
August	62·11	29·886	29·936	62·14	57·34	67·65	53·45	58·56	57·87	60·71	74	56·3	5·32	2755·9	12	88
September ...	55·49	29·922	29·983	60·78	56·96	66·10	54·67	59·46	58·44	60·64	77	56·7	1 21	2514·1	7	133
October	50·78	29·736	29·818	51·42	49·39	56·60	48·85	52·39	54·41	51 45	85	52·9	2·72	4220·2	22	25
November ...	46·57	29·754	29·963	46·82	45·71	50·31	41·50	46·65	51·65	46·29	91	45·2	3·86	4146·1	39	6
December ..	44·85	29·808	29·901	44·75	43·57	49·68	40·74	45·03	48·19	45 30	89	38·5	3·39	3495·8	34	1

TABLE No. 11.

Summary of Work done during the Year ending December 31st, 189.

	No. 1. District	No. 2. District	No. 3. District	No. 4. District	TOTAL.
Number of Complaints received	473	418	385	477	1,753
Inspection of Dwelling Houses...	3819	3878	3672	4066	15,435
,, Cellars	347	404	251	274	1,276
,, Schools	39	24	37	58	158
,, Lodging Houses	736	343	...	72	1,151
,, Slaughter Houses	98	371	357	243	1,069
,, Canal Boats	...	96	...	...	96
,, Mills and Workshops	493	567	554	543	2,157
,, Bakehouses	110	273	172	191	746
,, Markets	...	256	237	128	621
,, Ashpits and Yards	4165	4106	3822	4716	16,809
,, Drains	4275	4433	3912	4538	17,158
,, Infected Houses	162	88	118	95	463
,, Vans and Tents	183	77	57	148	465
Notices served for Slopstone Pipes	20	16	9	30	75
,, Defective Drains	269	241	298	228	1,036
,, ,, Spouts	14	27	25	65	131
,, ,, Water Closets	78	153	79	98	408
,, ,, Privies and Ashpits ...	48	59	60	34	201
,, Privies converted into W.C's.	84	132	74	107	397
,, Overcrowding	2	1	...	2	5
,, Limewashing	8	70	29	39	146
,, Yard Pavement	111	34	128	76	349
,, Manure Accumulations ...	...	11	9	8	28
,, Stagnant Water......	3	28	20	34	85
,, General Nuisances	26	53	11	84	174
,, Houses unfit for Habitation	...	28	...	...	28
,, To Paint Canal Boat Cabin	...	1	...	...	1
,, Sewer, Level, and Pave	169	308	416	...	893
Smoke Observations	47	2	...	18	67
Animals Removed	7	8	5	22	42
Houses Fumigated...	111	88	82	61	342
Bedding Disinfected	38	22	53	75	188
Drains Tested	14	24	6	33	77
Re-Inspections	871	1426	714	2079	5,090

TABLE No. 12.

Return of Port Sanitary Work for the Year ending December 31st, 1898.

Steamships Inspected		732
Sailing Vessels Inspected		167
Re-Inspections		219
Condition of Vessels examined	Good	756
	Defective	143
Defective conditions remedied :—		
Paints stored in Forecastle		9
Forecastle Deck Leaking		6
Do. Dirty		62
Do. Required Painting		37
Do. Ventilation and Light Defective		13
Defective Ventilation of Privies and Water Closets		7
Foul and Defective Do. Do.		32
Defective Water Casks replaced with Iron Tanks		4
Foul Water Casks and Tanks		29
Provision Lockers not Ventilated		12
Dirty Provision Lockers		26
Foul Bilges		21
,, Peaks		5
,, Chain Lockers under Forecastle		14

TABLE No. 13.

The estimated Population, number of Births and Deaths, Rates per thousand, and natural increase in the Borough, for each year since 1841.

Years.	Estimated Population	No of Deaths.	Death Rate per 1000.	No. of Births.	Birth Rate per 1000.	Natural Increase
1841	51.000	1508	2957	1974	38·70	466
1842	52 840	1550	2933	1944	36·79	394
1843	54,680	1459	26 38	1975	36·12	516
1844	56,520	1380	24.42	2200	38·92	820
1845	58,360	1635	28 01	2293	39·29	558
1846	60,200	2189	36.36	2475	41·09	286
1847	62,050	2059	33.18	2268	36·59	209
1848	63,900	1550	24 26	2223	34·79	673
1849	65,750	1751	26.63	2403	36·55	652
1850	67,000	1745	25 81	2649	39·19	904
1851	69,450	2241	32.26	2803	40·36	562
1852	70,850	2284	32.23	2998	42·31	714
1853	72,250	2346	32.47	3072	42·51	726
1854	73,600	2013	27.35	3037	41·26	1024
1855	75,000	2557	34.10	3071	40·95	514
1856	76,400	2251	29.46	3151	41·24	900
1857	77,800	2131	27.39	3286	42·24	1155
1858	79,200	2545	32 13	3082	38.91	537
1859	80,600	2111	26 19	3399	42.17	1288
1860	82,000	2236	27.27	3381	41.23	1145
1861	82,985	2585	31.15	3626	43.69	1041
1862	83,231	2411	28 97	3522	42.32	1111
1863	83,477	2142	25.66	3388	40.57	1246
1864	83,686	2432	29 06	3422	40.89	990
1865	83,932	2708	32 26	3338	39.77	630
1866	84,178	2854	33.90	3535	41.99	681
1867	84,424	2608	30.89	3732	44.20	1124
1868	84,670	2798	33.04	3710	43.82	912
1869	84,916	2248	26.47	3434	40.44	1186
1870	85,162	2406	28.25	3486	40·93	1080
1871	85,427	2541	29.75	3438	40·24	897
1872	85,654	2294	26.78	3704	43·24	1410
1873	86,000	2899	33.71	3558	41·37	659
1874	86,000	2962	34.44	3582	41·65	620
1875	86,000	2581	30 01	3499	40·68	918
1876	86,600	2331	26.92	3623	41·84	1292
1877	87,000	2336	26·85	3601	41·39	1265
1878	87,300	2502	28·66	3697	42·35	1195
1879	87,600	2395	27·34	3403	38 83	1068
1880	88,000	2425	27·35	3475	39·49	1050
1881	96,524	2044	21·17	3489	36·14	1445
1882	97,656	2511	25·71	3785	38·76	1214
1883	98564	2345	23·79	3576	36·28	1231
1884	99 481	2540	25·53	3745	37·64	1205
1885	100,406	2563	25·52	3868	38·52	1305
1886	101,340	2769	27·32	3961	39·08	1192
1887	102,283	2703	26·42	3870	37·83	1167
1888	103,234	2326	22·53	3823	37·03	1497
1889	104,194	3019	28·97	3912	37·63	902
1890	105,163	2726	25·92	3718	35·35	992
1891	107,864	2807	26·02	3830	35·50	1023
1892	109,038	2481	22·75	3686	33·80	1205
1893	110,225	2753	24·97	3809	34·55	1056
1894	111,425	2186	19·61	3545	31·81	1359
1895	112,638	2528	22·44	3702	32·95	1174
1896	113,864	2191	19·24	3673	32·25	1482
1897	115,103	2687	23·34	3687	32·03	1000
1898	116,356	2107	18·10	3559	30·58	1452

TABLE No. 14.

TABLE OF DEATHS during the year 1898, in the Urban Sanitary District of Preston.

Classified according to DISEASES, AGES, and LOCALITIES.

Names of Localities adopted for the purpose of these Statistics; public institutions being shown as separate Localities. *(Columns for Population and Births are in Table B.)*	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.				FEVER.																	
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25	25 and under 65	65 and upwards.		Small Pox.	Scarlatina.	Diphtheria	Membranous Croup.	Typhus	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal	Cholera	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea & Dysentery	Rheumatic Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy	Heart Disease	Influenza.	Injuries.	All other Diseases.	TOTAL
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
St. Peter's Ward ...	362	155	43	13	19	93	39	Under 5	...	...	3	...	...	1	..	...	...	...	1	1	19	54	...	2	24	1	...	2	91	199
								5 upwards	...	1	...	...	...	9	...	...	2	...	...	...	1	1	...	23	29	31	. .	1	65	163
Park Ward	567	251	59	13	22	135	87	Under 5	...	...	2	2	...	..	...	..	...	...	...	...	18	92	...	...	54	1	...	...	140	309
								5 upwards	...	...	1	...	...	9	...	...	1	...	...	...	1	3	...	32	46	44	...	9	112	258
Fishwick Ward	446	188	41	13	19	126	59	Under 5	...	...	...	3	...	1	...	...	...	...	...	...	1	54	...	...	37	1	...	1	131	229
								5 upwards	...	..	...	2	...	6	...	...	2	...	...	...	...	3	2	29	46	31	...	3	93	217
St. John's Ward	248	82	32	4	10	87	33	Under 5	..	..	1	1	...	...	...	...	...	...	...	...	2	33	...	3	23	...	...	2	49	114
								5 upwards	...	...	...	...	...	4	...	...	1	...	...	...	...	3	...	18	28	20	...	1	59	134
Christ Church Ward ...	188	53	21	6	6	62	40	Under 5	...	1	...	...	...	1	...	...	...	...	1	...	3	15	...	1	16	1	...	1	34	74
								5 upwards	...	1	...	...	...	2	...	...	...	...	...	..	...	1	1	7	22	21	...	7	52	114
Maudland Ward	215	77	18	9	12	74	25	Under 5	...	...	...	1	...	...	...	...	...	...	1	...	3	20	...	1	15	..	...	...	54	95
								5 upwards	...	...	...	...	...	5	...	...	...	...	..	...	...	2	3	15	13	26	...	5	51	120
Infirmary, Gaol, &c. ...	81	6	7	6	7	43	12	Under 5	...	1	1	1	...	...	...	. .	...	...	...	...	...	...	...	...	2	...	...	3	5	13
								5 upwards	...	...	...	...	...	4	...	...	...	...	...	..	...	...	1	3	6	10	...	14	30	68
Total	2107	812	221	64	95	620	295	Under 5	...	2	7	8	...	3	...	...	...	...	3	1	46	268	...	7	171	4	...	9	504	1033
								5 upwards	...	2	1	2	...	39	...	...	6	...	...	...	2	13	7	127	190	183	...	40	462	1074

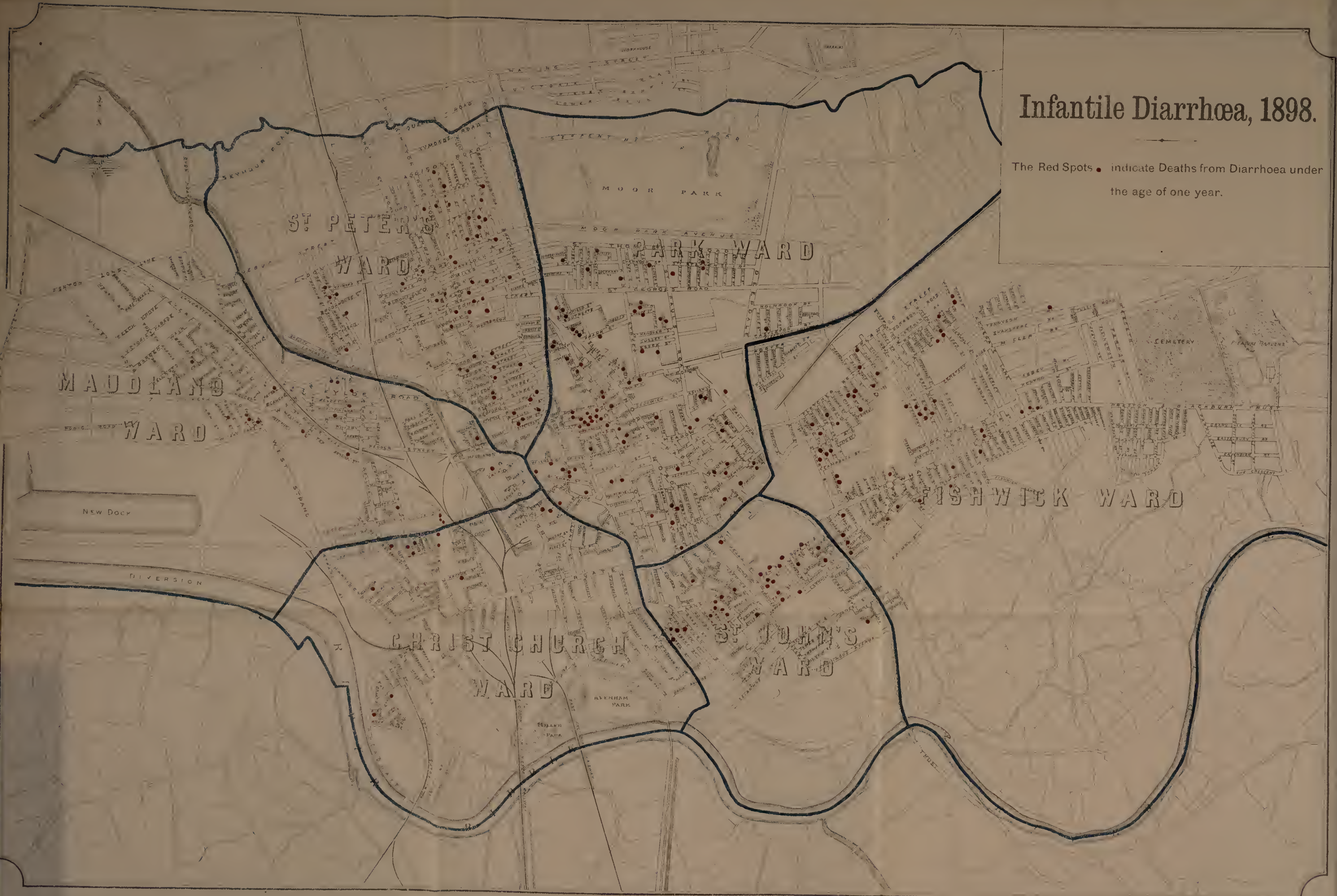
The subjoined numbers have also to be taken into account in judging of the above records of mortality.

Deaths occurring outside the district among persons belonging thereto.	138	11	3	...	1	50	73	Under 5	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	11	14
								5 upwards	...	...	...	...	...	...	...	...	...	...	..	...	...	2	...	11	25	11	...	...	75	124
Deaths occurring within the district among persons not belonging thereto.	...	..	...	...	...	...	...	Under 5	...	...	..	...	...	. .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	. .	...
								5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...

TABLE 15.

TABLE OF POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS.

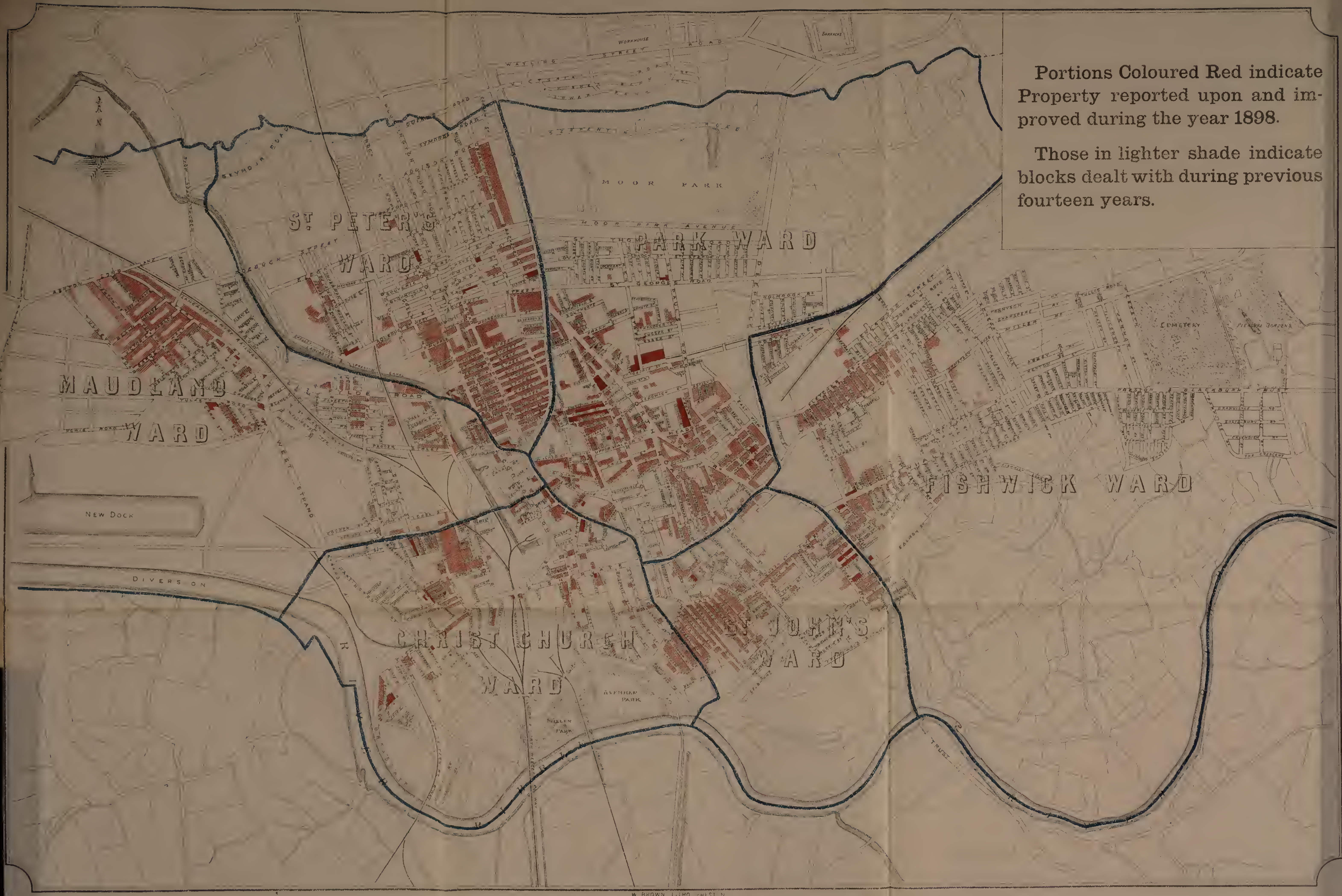
Names of Localities adopted for the purpose of these Statistics; public institutions being shown as separate localities. *(Columns for Population and Births are in Table B.)*	POPULATION AT ALL AGES		Registered Births.	Aged under 5 or over 5	NEW CASES OF SICKNESS IN EACH LOCALITY, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH.											Enteric or Typhoid removed to Hospital	Erysipelas removed to Hospital.
									FEVERS.								
	Census, 1891.	Estimated to middle of 1898.			Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued	Relapsing	Puerperal	Cholera	Erysipelas		
(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	1	2	3	4	5	6	7	8	9	10	11		
St. Peter's Ward..... ...	20,145	22,081	758	Under 5	...	6	4	...	...	6	...	...	...	...	...	...	...
				5 upwards	...	4	1	...	.	38	...	...	3	...	11	1	...
Park Ward	27,892	28,203	905	Under 5	..	4	5	...	...	...	..	...	...	...	...	...	..
				5 upwards	...	4	3	...	...	61	...	...	2	..	9	14	...
Fishwick Ward	19,782	24,186	805	Under 5	...	5	2	...	...	3	...	...	...	...	1	...	...
				5 uwpards	...	9	...	...	...	45	...	...	3	...	9	3	...
St. John's Ward	13,582	13,679	395	Under 5	...	2	2	...	...	3	...	...	...	...	..	...	...
				5 upwards	...	1	...	...	...	26	...	...	1	...	12	3	...
Christ Church Ward ...	13,510	13,464	300	Under 5	...	4	...	. .	...	1	...	..	...	...	1	...	...
				5 upwards	...	6	1	..	...	18	...	...	1	...	3	6	...
Maudland Ward	12,953	14,743	393	Under 5	...	...	1	...	...	3	...	...	...	...	3	...	...
				5 upwards	...	3	...	...	...	29	...	...	1	...	2	1	1
Infirmary, Gaol, &c. ...	...	...	3	Under 5	...	...	...	...	...	...	...	...	...	...	...	..	...
				5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	..
Total.........	107,864	116,356	3559	Under 5	...	21	14	...	...	16	..	...	..	...	5	...	...
				5 upwards	..	27	5	...	...	217	...	...	11	...	46	28	1



Infantile Diarrhœa, 1898.

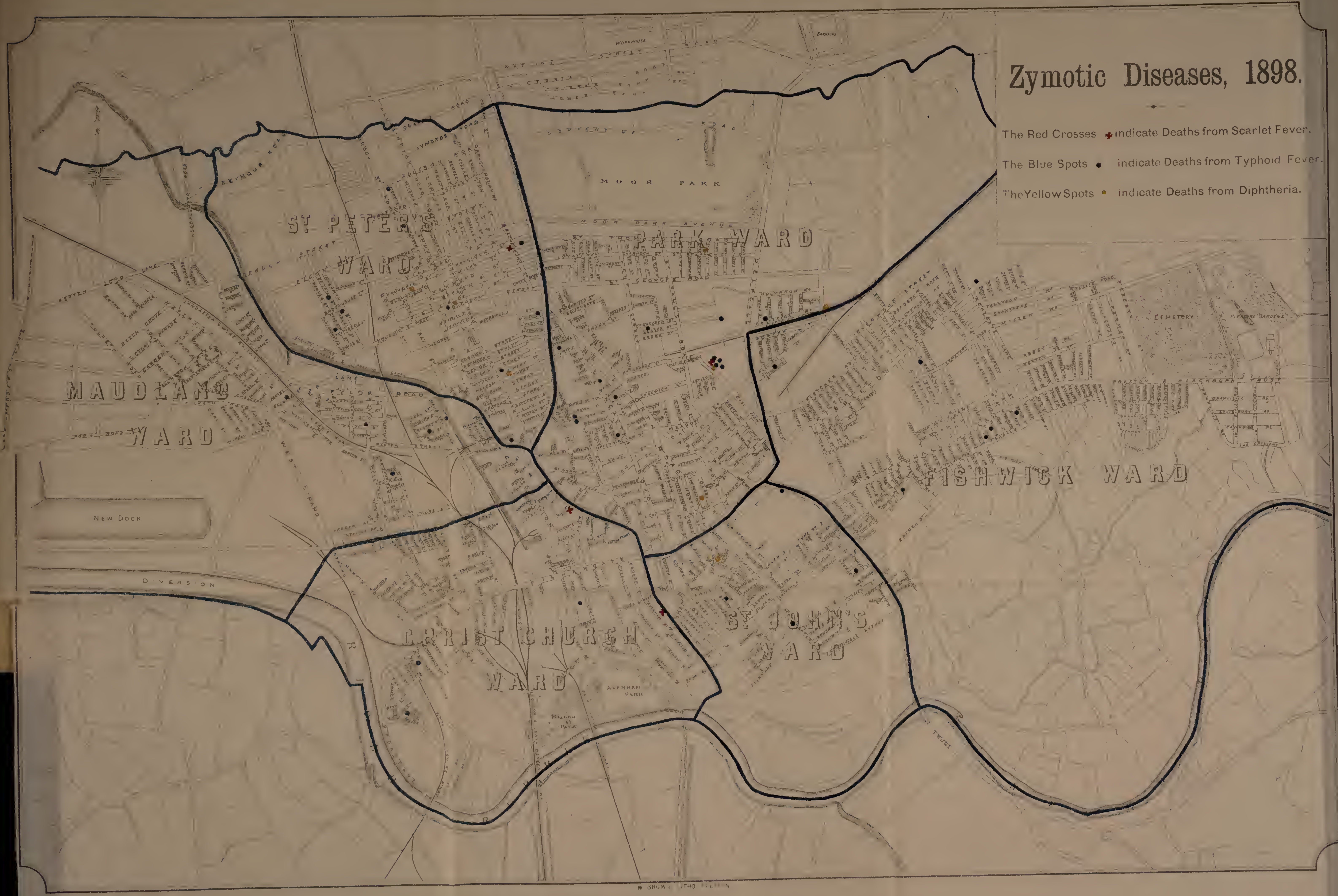
The Red Spots ● indicate Deaths from Diarrhoea under the age of one year.

W. BROWN LITHO PRESTON



Portions Coloured Red indicate Property reported upon and improved during the year 1898.

Those in lighter shade indicate blocks dealt with during previous fourteen years.

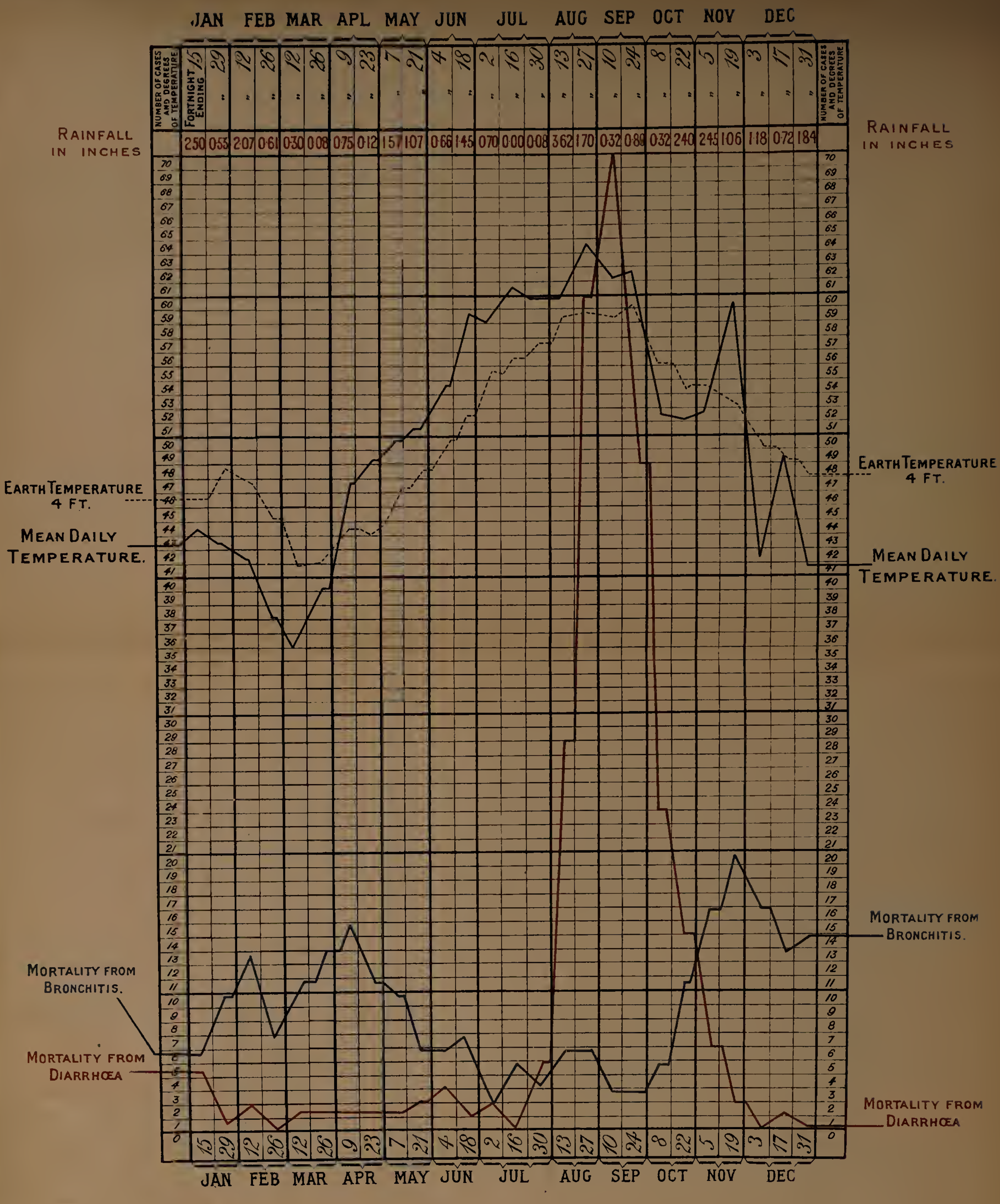


Zymotic Diseases, 1898.

The Red Crosses ✚ indicate Deaths from Scarlet Fever.

The Blue Spots ● indicate Deaths from Typhoid Fever.

The Yellow Spots ● indicate Deaths from Diphtheria.


JAN FEB MAR APL MAY JUN JUL AUG SEP OCT NOV DEC
Number of cases and degrees of temperature
Fortnight ending 15, 29, 12, 26, 12, 26, 9, 23, 7, 21, 4, 18, 2, 16, 30, 13, 27, 10, 24, 8, 22, 5, 19, 3, 17, 31
Rainfall in inches
2.50 0.55 2.07 0.61 0.30 0.08 0.75 0.12 1.57 1.07 0.66 1.45 0.70 0.00 0.08 3.62 1.70 0.32 0.89 0.32 2.40 2.45 1.06 1.18 0.72 1.84
Earth Temperature 4 ft.
Mean Daily Temperature.
Mortality from Bronchitis.
Mortality from Diarrhœa
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

ROYAL STATISTICAL SOCIETY
[illegible] JUN. 99